



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

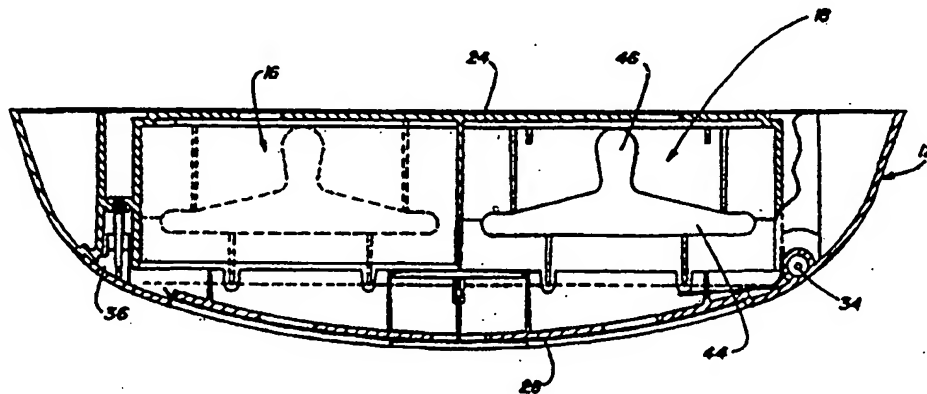
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(54) Title: IMPROVED PAPER TOWEL DISPENSING MECHANISM FOR PUBLIC WASHROOMS



## (57) Abstract

An improved dispenser (10) for paper towels that prevents potential vandals from pulling large clumps of towels out of the dispenser at one time includes an outer housing (12) defining an interior space, and a stacking mechanism (14) mounted within the outer housing for holding a stack of paper towels within the interior space. A dispensing throat (16, 18) is defined in the outer housing proximate to an end of the stacking mechanism, and includes a slot portion (44) that has a length that is sufficient to permit a paper towel to be pulled therethrough by a user, but a relatively narrow width that will prevent more than a few towels from being pulled through the throat at one time. The dispensing throat further includes a finger slot portion (46) to help a user grip and pull a paper towel through the dispensing slot despite the relatively narrow width of the dispensing slot.

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IMPROVED PAPER TOWEL DISPENSING MECHANISM  
FOR PUBLIC WASHROOMS

BACKGROUND OF THE INVENTION

1. Field of the Invention

5           This invention relates broadly to the field of dispensers for dispensing personal hygiene products, such as paper towels, toilet tissue and hand soap, in a public washroom. More specifically, this invention relates to a paper towel dispensing mechanism that is specifically  
10 designed to prevent potential vandals from seizing large clumps of towels at one time.

2. Description of the Prior Art

          Vandalism in public restrooms is an increasingly serious problem for property owners, consumers and  
15 maintenance personnel in the United States and throughout the world. All too often, dispensers for paper towels, toilet tissue and hand soap such as those manufactured and sold by the assignee of this invention, Scott Paper Company, are targets for such activity. Paper towel dispensers, in  
20 particular, in some locations are regularly beaten, burned, defaced with graffiti, and pulled or pried off of the wall, rendering them inoperable for others. In addition, vandals will pull clumps of paper towels out of the dispenser, scattering them about the washroom or, even worse, stuffing  
25 them into toilets or sink fixtures.

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Unfortunately, damaged or inoperative dispensers are expensive to replace, and, ironically, their replacements present attractive new targets to vandals once installed. Additionally, the institutions that suffer most from vandalism are often underfunded and in a poor position to be buying washroom fixtures and dispensers on a frequent basis.

A long and unfilled need exists for a public restroom dispenser that will deter and resist damage from vandalism and careless maintenance personnel.

#### SUMMARY OF THE INVENTION

It is an object of this invention to provide a public restroom dispenser that will prevent large quantities of paper towel to be pulled from a dispenser at one time. A dispenser according to the invention will prevent waste during normal use as well.

In order to achieve the above and other objects of the invention, an improved vandal-resistant paper towel dispenser for public washrooms includes, according to a first aspect of the invention, an outer housing defining an interior space; a stacking mechanism mounted within the outer housing for holding a stack of paper towels within the interior space; and a dispensing throat defined in the outer housing proximate to an end of the stacking mechanism, the dispensing throat comprising a slot portion that has a length that is sufficient to permit a paper towel to be pulled therethrough by a user, but a relatively narrow width that will prevent more than a few towels from being pulled through the throat at one time, the dispensing throat further comprising a finger slot portion to help a user grip and pull a paper towel through the dispensing slot despite the relatively narrow width of the dispensing slot.

According to a second aspect of the invention, an improved dispensing throat configuration for paper towels includes a surface; and a dispensing throat defined in the

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surface, the dispensing throat comprising a slot portion that has a length that is sufficient to permit a paper towel to be pulled therethrough by a user, but a relatively narrow width that will prevent more than a few towels from being  
5 pulled through the throat at one time, the dispensing throat further comprising a finger slot portion to help a user grip and pull a paper towel through the dispensing slot despite the relatively narrow width of the dispensing slot.

These and various other advantages and features of  
10 novelty which characterize the invention are pointed out with particularity in the claims annexed hereto and forming a part hereof. However, for a better understanding of the invention, its advantages, and the objects obtained by its use, reference should be made to the drawings which form a  
15 further part hereof, and to the accompanying descriptive matter, in which there is illustrated and described a preferred embodiment of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a perspective view of an improved  
20 dispenser of towels that is constructed according to a preferred embodiment of the invention;

FIGURE 2 is a perspective view showing the dispenser of FIGURE 1 in an open position;

FIGURE 3 is a cross-sectional view taken along  
25 lines 3-3 in FIGURE 1;

FIGURE 4 is a cross-sectional view taken along lines 4-4 in FIGURE 1;

FIGURE 5 is a view showing a portion of FIGURE 4 in greater detail; and

30 FIGURE 6 is a diagrammatical view depicting a dispensing throat for the dispenser shown in FIGURES 1-5 in its preferred embodiment.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

Referring now to the drawings, wherein like  
35 reference numerals designate corresponding structure

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throughout the views, and referring in particular to FIGURES 1 and 2, an improved dispenser 10 for paper towels that is constructed according to a preferred embodiment of the invention is designed to prevent potential vandals from pulling large clumps of towels out of the dispenser 10 at one time, and also to minimize waste during ordinary use. As may be seen in FIGURES 1 and 2, dispenser 10 includes an outer housing 12 that defines an interior space, and a pair of vertically oriented stacking and dispensing mechanisms 14 that are provided within the interior space, as may best be seen in FIGURE 2.

As may be seen in FIGURES 1 and 3, dispenser 10 includes first and second dispensing throats 16, 18 which are defined in a lower surface 20 at a lower end 22 of the outer housing 12. First dispensing throat 16 is designed and intended to dispense paper towels that are held in the leftmost stacking and dispensing mechanism 14, as viewed in FIGURE 2, while second dispensing throat 18 is designed and intended to dispense paper towels from the rightmost stacking and dispensing mechanism 14. The dispensing mechanism and the details of dispensing throats 16, 18 will be discussed in greater detail below.

Outer housing 12 further includes a rear mounting surface 24 having a number of mounting holes 26 defined therein for mounting the dispenser 10 to a vertical surface, such as a wall of a public washroom. Outer housing 12 further includes a door 28 for gaining access to the stacking and dispensing mechanism 14 during maintenance and other service. Door 28 is mounted for pivotal movement on a hinge mechanism 34, and may be locked in the closed position shown in FIGURE 1 by means of a locking mechanism 36, the details of which are not essential for an understanding of the invention.

Turning briefly to FIGURE 4, it will be seen that stacking and dispensing mechanism 14 includes an overfill prevention guard 38 at a top of the outer housing 12. Overfill prevention guard 38 is intended to prevent

maintenance personal from stuffing paper towels into the stacking and dispensing mechanism 14 so tightly that normal operation of the dispenser 10 is interfered with. As may be seen in FIGURES 4 and 5, stacking and dispensing mechanism 14 each include a staging area 32 proximate the respective dispensing throat 16, 18 for spacing and slowing towels as they approach the dispensing throat 16, 18. As may also be seen in FIGURE 2, each staging area 32 includes a pair of rib members 30 that are oriented so as to be parallel to the path of travel of the towels as they approach the respective dispensing throat 16, 18. Preferably, each rib member 30 has a number of ratchet-like teeth 40 defined thereon for temporarily arresting movement of the towels as they approach the dispensing throat 16, 18. This permits the paper towels to feed into the respective dispensing throat 16, 18 relatively uniformly irrespective of the weight of the paper towels that are stacked in the stacking and dispensing mechanism 14. In other words, operation of the dispenser 10 is made relatively independent of how full the dispenser is at any particular time.

Looking now to FIGURE 6, it will be seen that a dispensing throat 42, which may either be the first dispensing throat 16 or the second dispensing throat 18, preferably has a special configuration to prevent large clumps of paper towels from being pulled out of the dispenser at one time. Specifically, each dispensing throat 42 includes a slot portion 44 that has a length that is sufficient to permit a paper towel to be pulled therethrough by a user, but a relatively narrow width that will prevent more than a few towels from being pulled through the throat at one time. The dispensing throat 42 further includes a finger slot portion 45 to help a user grip and pull a paper towel through the dispensing slot despite the relatively narrow width of the dispensing slot. Preferably, the slot portion 44 of the dispensing throat 42 has a point of minimum width  $W_{min}$  that is less than about 2.0 inches, with a more preferred width that is less than about 1.0 inches,

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with a most preferred width of about 0.5 inches. Finger slot portion 46 preferably has a width  $W_{slot}$  that is greater than the width of a human finger, and is preferably within the range of about 0.625 inches to about 1.0 inches. More  
5 preferably,  $W_{slot}$  is within the range of about 0.656 inches to about 0.81 inches, with a most preferred value of about 0.710 inches. Finger slot portion 46 preferably has a length, defined as the longitudinal distance from the end of the slot to the wall of slot portion 44, that is within the  
10 range of about 1.0 inches to about 4.0 inches. More preferably,  $L_{slot}$  is within the range of about 2.0 inches to about 3.0 inches, with a most preferred value of about 2.55 inches.

As may be seen in FIGURE 3, finger slot 46 is  
15 preferably oriented toward the rear of outer housing 12, so that it will be partially hidden behind the tail of a downwardly extending paper towel during operation. This is important for both aesthetic reasons and for deterrence of vandalism.

20 In operation, maintenance personal will fill the stacking and dispensing mechanism 14, with overfill being prevented by the overfill prevention guard 38. During use, a consumer will grasp a paper towel by grabbing the downwardly extending tail of the towel, and pinching the  
25 body of the towel by placing a finger in the finger slot portion 46 of one or more of the dispensing throats 42. If the user pulls too aggressively, such as in an effort to pull a large clump of towels out of the dispenser 10, he or she will not be successful, because a large clump of towels  
30 will not fit through the slot portion 44 of the dispensing throat 42. Accordingly, washroom waste is materially reduced.

It is to be understood, however, that even though numerous characteristics and advantages of the present  
35 invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes



may be made in detail, especially in matters of shape, size and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are  
5 expressed.

WHAT IS CLAIMED IS:

1. An improved dispenser for paper towels that prevents potential vandals from pulling large clumps of towels out of the dispenser at one time, comprising:
  - 5 an outer housing defining an interior space;  
stacking means mounted within said outer housing for holding a stack of paper towels within said interior space; and  
a dispensing throat defined in said outer housing
  - 10 proximate to an end of said stacking means, said dispensing throat comprising a slot portion that has a length that is sufficient to permit a paper towel to be pulled therethrough by a user, but a relatively narrow width that will prevent more than a few towels from being pulled through said throat
  - 15 at one time, said dispensing throat further comprising a finger slot portion to help a user grip and pull a paper towel through said dispensing slot despite the relatively narrow width of said dispensing slot.
2. A dispenser according to claim 1, wherein
- 20 said slot portion of said dispensing throat has a point of minimum width that is less than about 2.0 inches.
3. A dispenser according to claim 2, wherein said slot portion of said dispensing throat has a point of minimum width that is less than about 1.0 inches.
- 25 4. A dispenser according to claim 1, wherein said finger slot portion of said dispensing throat has a width that is greater than the width of a human finger.
5. A dispenser according to claim 1, wherein said finger slot portion of said dispensing throat has a
- 30 width that is within the range of about 0.625 inches to about 1.0 inches.

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6. A dispenser according to claim 5, wherein said finger slot portion of said dispensing throat has a width that is within the range of 0.656 inches to about 0.81 inches.
- 5 7. A dispenser according to claim 1, wherein said finger slot portion of said dispensing throat has a length that is within the range of about 1.0 inches to about 4.0 inches.
8. A dispenser according to claim 7, wherein  
10 said finger slot portion of said dispensing throat has a length that is within the range of about 2.0 inches to about 3.0 inches.
9. A dispenser according to claim 1, wherein said dispensing throat is positioned at a lower end of said  
15 outer housing, and said finger slot portion of said dispensing throat is oriented toward a rear of said outer housing, whereby it will be hidden from view by a downwardly extending tail of a paper towel during use for aesthetic and deterrence purposes.
- 20 10. A dispenser according to claim 1, wherein said stacking means comprises a staging area proximate said dispensing throat for spacing and slowing towels as they approach said dispensing throat.
11. A dispenser according to claim 10, wherein  
25 said staging area comprises at least one rib member that is oriented so as to be parallel to the path of travel of the towels as they approach said dispensing throat, and a number of ratchet-like teeth defined on said rib for temporarily arresting movement of the towels as they approach the  
30 dispensing throat.

12. A dispenser according to claim 11, wherein said staging area comprises two of said rib members.

13. An improved dispensing throat configuration for paper towels, comprising:

5 a surface; and

a dispensing throat defined in said surface, said dispensing throat comprising a slot portion that has a length that is sufficient to permit a paper towel to be pulled therethrough by a user, but a relatively narrow width  
10 that will prevent more than a few towels from being pulled through said throat at one time, said dispensing throat further comprising a finger slot portion to help a user grip and pull a paper towel through said dispensing slot despite the relatively narrow width of said dispensing slot.

15 14. A dispensing throat according to claim 13, wherein said slot portion of said dispensing throat has a point of minimum width that is less than about 2.0 inches.

15 15. A dispensing throat according to claim 14, wherein said slot portion of said dispensing throat has a  
20 point of minimum width that is less than about 1.0 inches.

16. A dispensing throat according to claim 13, wherein said finger slot portion of said dispensing throat has a width that is greater than the width of a human finger.

25 17. A dispensing throat according to claim 13, wherein said finger slot portion of said dispensing throat has a width that is within the range of about 0.625 inches to about 1.0 inches.

18. A dispensing throat according to claim 17,  
30 wherein said finger slot portion of said dispensing throat

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has a width that is within the range of about 0.656 inches to about 0.81 inches.

19. A dispensing throat according to claim 13, wherein said finger slot portion of said dispensing throat  
5 has a length that is within the range of about 1.0 inches to about 4.0 inches.

20. A dispensing throat according to claim 19, wherein said finger slot portion of said dispensing throat has a length that is within the range of about 2.0 inches to  
10 about 3.0 inches.

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FIG. 1

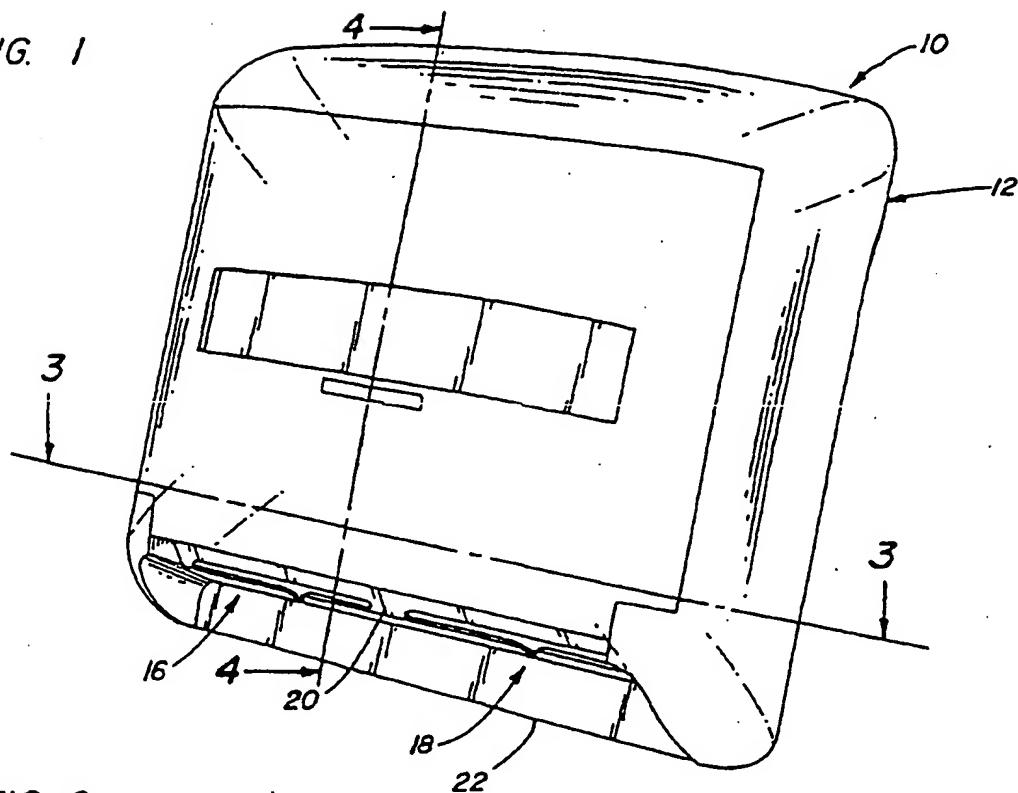
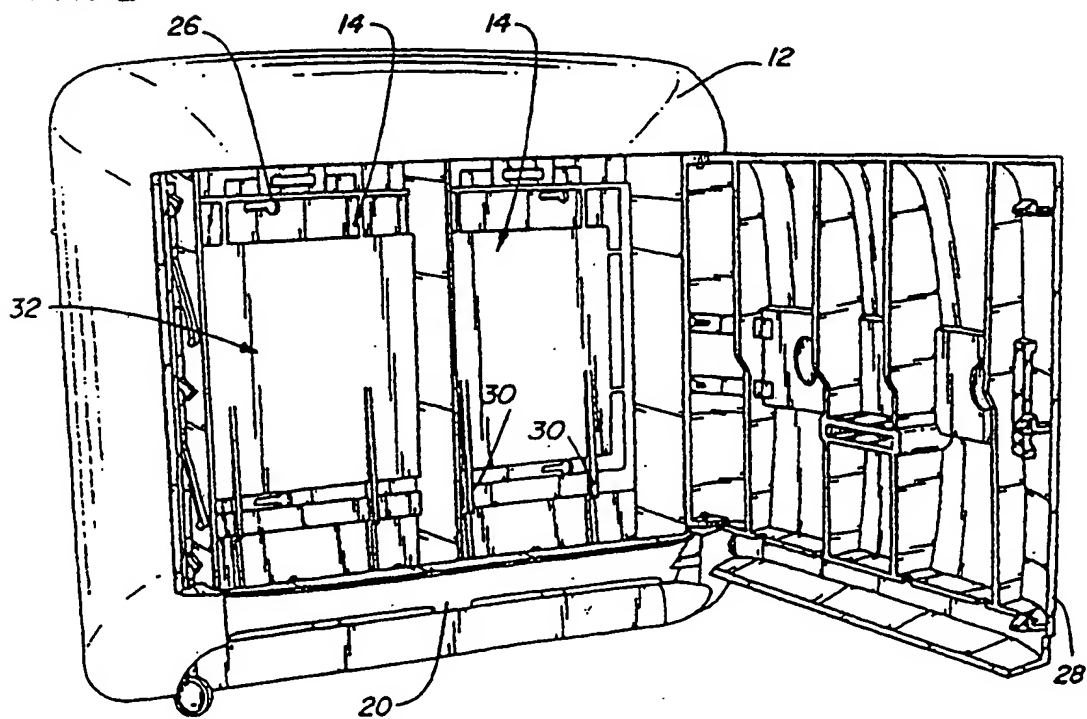
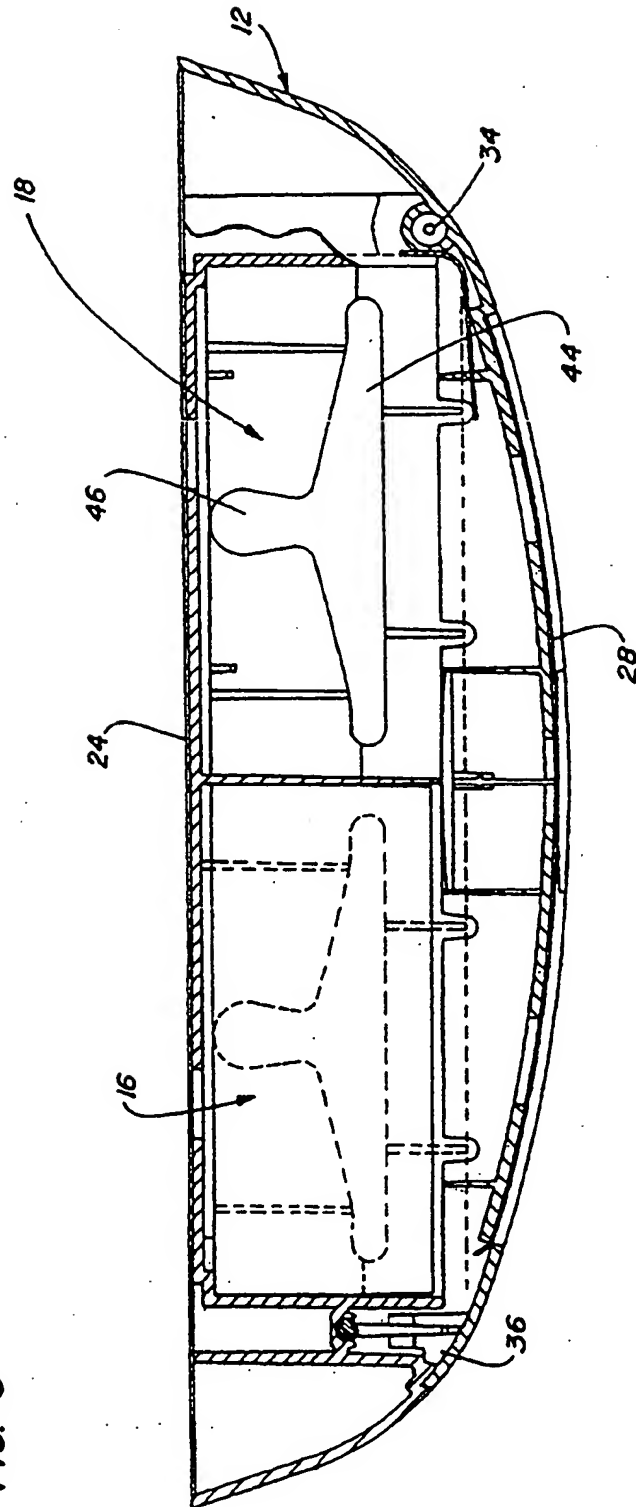


FIG. 2



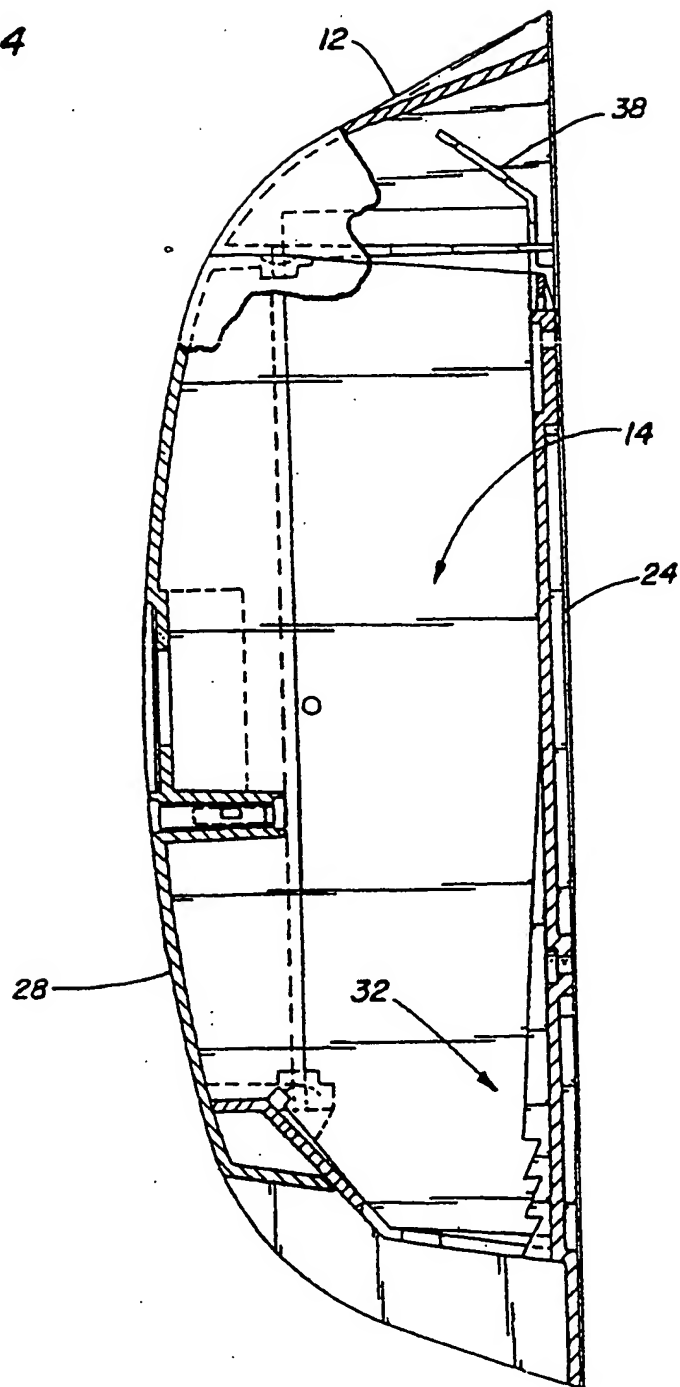
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FIG. 3



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FIG. 4





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FIG. 5

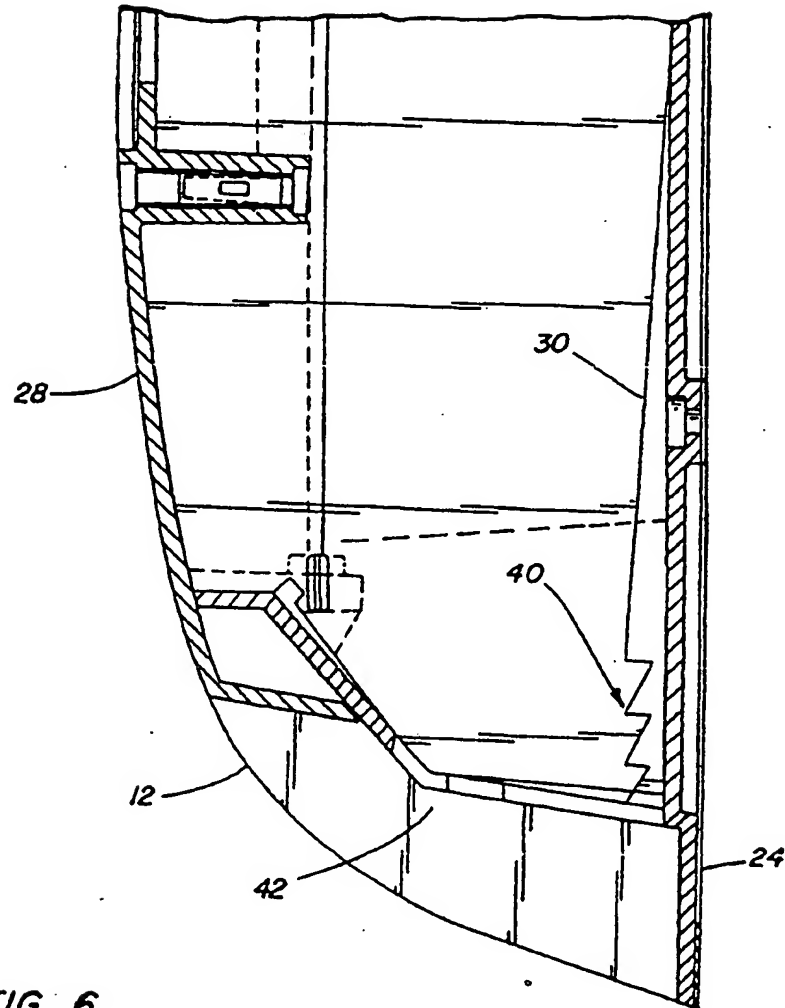
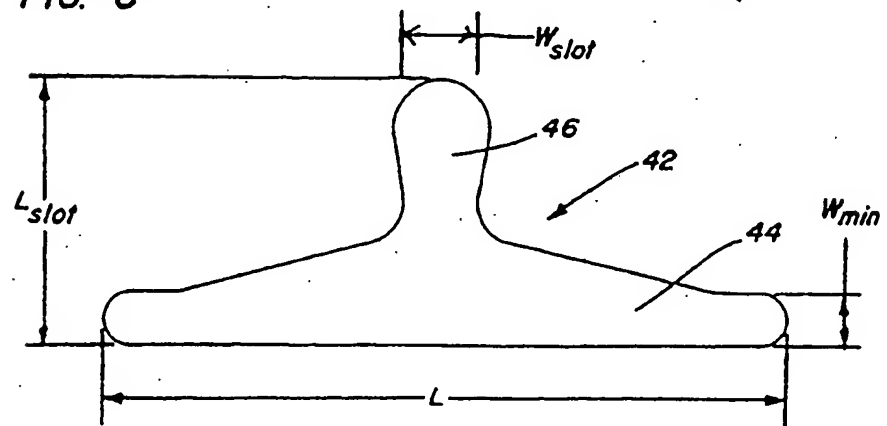


FIG. 6



# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/13225

A. CLASSIFICATION F SUBJECT MATTER  
IPC 6 A47K10/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A47K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,3 498 688 (MOTT RALPH B ET AL) 3 March 1970  see column 2, line 39 - column 3, line 14 see figures 1,2	1-5,7,8, 10, 13-17, 19,20
X	US,A,3 935 965 (STEVENS ROBERT B) 3 February 1976  see column 2, line 5 - column 3, line 2 see figures 1-4	1-5,7,8, 10, 13-17, 19,20
A		9
X	FR,A,1 537 127 (COMPAGNIE DE KAYSERSBERG) 23 August 1968	1-5,7, 13-17
A	see the whole document	9,10
	-/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

28 November 1996

Date of making of the international search report

13.12.96

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-3498688	03-03-70	NONE	
US-A-3935965	03-02-76	NONE	
FR-A-1537127		NONE	
US-A-5074430	24-12-91	NONE	

# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/US 96/13225

## C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US, A. 5 074 430 (ROBERTS WILLIAM C) 24 December 1991 see the whole document -----	1-3, 13-15 9

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